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Attorneys for Plaintiffs

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON

WASHINGTON TOXICS COALITION;) Civ. No. C04-1998C
NORTHWEST COALITION FOR)
ALTERNATIVES TO PESTICIDES;)
NATIONAL WILDLIFE FEDERATION;)
DEFENDERS OF WILDLIFE; NATURAL) DECLARATION OF SCOTT DUNGAN
RESOURCES DEFENSE COUNCIL;)
CENTER FOR BIOLOGICAL DIVERSITY;)
PACIFIC COAST FEDERATION OF)
FISHERMEN'S ASSOCIATIONS;)
INSTITUTE FOR FISHERIES RESOURCES;)
and HELPING OUR PENINSULA'S)
ENVIRONMENT,)

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF)
INTERIOR; UNITED STATES)
DEPARTMENT OF FISH AND WILDLIFE)
SERVICE; UNITED STATES)
DEPARTMENT OF COMMERCE; and)
NATIONAL MARINE FISHERIES)
SERVICE,)

Defendants,

1)
 2 and)
 3)
 4 CROPLIFE AMERICA, WASHINGTON)
 5 FRIENDS OF FARMS AND FORESTS,)
 6 WASHINGTON STATE POTATO)
 7 COMMISSION, NATIONAL POTATO)
 8 COUNCIL, WASHINGTON STATE FARM)
 9 BUREAU, IDAHO FARM BUREAU)
 10 FEDERATION OF WHEAT GROWERS,)
 11 WASHINGTON GOLF COURSE)
 12 SUPERINTENDENTS ASSOCIATION, HOP)
 13 GROWERS OF WASHINGTON, AND)
 14 WASHINGTON STATE HORTICULTURAL)
 15 ASSOCIATION,)
 16)
 17 Defendant-Intervenors.)
 18)
 19)
 20)
 21)
 22)
 23)
 24)
 25)
 26)

I, Scott Dungan, hereby state and declare as follows:

1. I reside in Renton, Washington, close to the Cedar River. I was born in Snoqualmie, Washington, and have been a resident of this state all my life, with the exception of one year.

2. I have been a member of the Washington Toxics Coalition (“WTC”) for approximately six years. Prior to joining WTC, I also participated in activities it sponsored, and assisted as a volunteer.

3. WTC is a registered non-profit corporation with headquarters in Seattle, Washington. WTC is dedicated to protecting public health and the environment by promoting alternatives to toxic chemicals in homes, schools, workplaces, agriculture, and industry. It works to ensure that uses of pesticides authorized by EPA will not harm threatened and endangered salmon and steelhead. To advance these goals, WTC engages in public education, research, and advocacy before political, administrative, and judicial bodies. WTC has approximately 1,300

1 members who reside primarily in Washington, and who work and recreate in salmon habitat
2 throughout the Pacific region.

3 4. WTC is directly impacted by the failure of defendants NOAA Fisheries and the
4 Fish and Wildlife Service to comply with the Endangered Species Act (“ESA”) and National
5 Environmental Policy Act (“NEPA”) in delegating its mandatory ESA duties to ensure that
6 federal actions do not take listed species or destroy or adversely modify their habitat. Water
7 quality degradation, caused in part by the introduction of pesticides and their residues into fish
8 habitat, is a contributing cause of the decline of salmon and steelhead species throughout the
9 Pacific region. I attach to this declaration a declaration dated April 19, 2001 from Richard
10 Ewing which explains how pesticides impair water quality and harm salmon and steelhead.

11 5. I am injured by the decline of salmon and steelhead species in Washington and
12 elsewhere because I care about healthy fish populations and properly functioning ecosystems. I
13 derive substantial enjoyment and fulfillment from observing salmon and steelhead in
14 Washington. These opportunities have become increasingly difficult in my lifetime due to the
15 decline of these species, which harms my interests and me.

16 6. For example, I regularly hike, raft, tube, and recreate in or near salmon-bearing
17 rivers near where I live. There are two city parks and a large undeveloped natural area near my
18 home in Renton through which flows the Cedar River. Puget Sound chinook salmon, as well as
19 other species of salmon and steelhead, can be found in the Cedar River. I regularly visit this park
20 to hike and observe salmon and other species in the river. Oftentimes on such visits, I will sit on
21 a log near the river and meditate, because it is one of the most calming places I know. I enjoy
22 photography both of the river and of the fish themselves. In the past, I have taken pictures of
23 spawning salmon for my own enjoyment. I have also taken pictures of illegal activities such as
24

1 off-road vehicle use that harm salmon, to document such activities for the authorities, because I
2 wish to stop illegal activities that harm the species. I have worked with the City of Renton
3 extensively to report threats and damage to these parks. I have coordinated with neighbors and
4 city officials better park management practices which have resulted in protective signage, better
5 monitoring by the Park's Department and Police as well as cleanups. For example, in the fall of
6 2004, I reported to the city an extensive dump site on a hillside of an unnamed creek that flows
7 through the natural zone park and into the Cedar River. I discovered this site at the onset of the
8 fall Chinook Salmon run up the Cedar River. I wrote the City of Renton about this dumpsite on
9 their property and expressed concern about the likelihood of toxicity runoff going into the stream
10 and traveling to the Cedar River and harming migrating salmon and other species. The City of
11 Renton Park's Department and I discussed the possibility of me organizing other neighbors to do
12 a volunteer clean up project where the city would haul away what we carried out to the road. But,
13 because the dumpsite was so extensive, the city contracted with a company to have the site
14 cleaned up.

15 7. I have participated in such activities all my life. As a child, I fished and swam in
16 the Snoqualmie River and the Raging River as much as three times a week. I have been tubing
17 on the Cedar River in the summers and canoeing with a neighbor who is on the Cedar River
18 Council. I have also floated on the Snoqualmie River, and often observed steelhead during these
19 trips. I plan to continue these activities this summer and in the future to observe salmon and
20 steelhead.

21 8. I regularly participate in volunteer activities that are intended to help bring back
22 salmon in my watershed. For example, I have served as a volunteer salmon watcher at two sites
23 near my home. In this capacity, I count salmon and redds (salmon egg nest sites) for surveys. I
24

1 also report pollution, dumping or illegal poaching of fish. On at least two occasions, my report
2 of poaching led to an arrest and citations. Additionally, I document and advocate against illegal
3 off-road vehicle use in the public park near my home, in part because of the harm to salmon
4 habitat caused by such activities. A couple of years ago I made a presentation to the Cedar River
5 Council about activities that cause damage to salmon habitat. I undertake these volunteer
6 activities because I hope to contribute to stopping the decline of salmon and steelhead in the
7 Cedar River, and contribute to their recovery.

8 9. I intend to continue these activities as long as I am able, and as long as salmon
9 and steelhead are still available for observation and enjoyment.

10 10. NOAA Fisheries and FWS delegated their ESA duties to EPA for consultation on
11 pesticides that harm salmon and steelhead, despite the fact that EPA's methods for assessing the
12 risk of pesticides to salmon and steelhead consistently underestimate that risk. If NOAA
13 Fisheries and FWS continue to allow EPA to unilaterally consult on the effects of pesticides,
14 harmful uses of pesticides that injure these species will continue, and aquatic habitat on which
15 they rely will continue to decline. The likelihood that some evolutionarily significant units of
16 salmon and steelhead will go extinct will increase, and the likelihood of recovery will decrease.
17 My enjoyment in observing and protecting aquatic species will be impaired as a result.

18 Furthermore, the organizational interests of WTC in promoting alternatives to pesticides that do
19 not harm salmon and steelhead will be injured. Conversely, if NOAA Fisheries and FWS

20 //

21 //

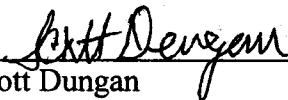
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1 comply with the law and ensure that EPA's pesticide registration activities do not harm salmon
2 and steelhead, the likelihood of recovery and these species' improvement will increase.

3 Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true
4 and correct to the best of my knowledge.

5 Executed this 09 day of May, 2005 in Renton, Washington.

6
7
8 
Scott Dungan

ATTACHMENT

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★ MAY 07 2001 ★

Attorney for Plaintiffs

AT SEATTLE
 CLERK U.S. DISTRICT COURT
 WESTERN DISTRICT OF WASHINGTON
 BY DEPUTY

UNITED STATES DISTRICT COURT
 FOR THE WESTERN DISTRICT OF WASHINGTON

WASHINGTON TOXICS COALITION,)	Civ. No. C01-0132C
NORTHWEST COALITION FOR)	
ALTERNATIVES TO PESTICIDES,)	
PACIFIC COAST FEDERATION OF)	DECLARATION OF RICHARD D.
FISHERMEN'S ASSOCIATIONS, and)	EWING, PH.D.
INSTITUTE FOR FISHERIES RESOURCES,)	
)	
Plaintiffs,)	
)	
v.)	
)	
ENVIRONMENTAL PROTECTION)	
AGENCY, and CHRISTINE TODD)	
WHITMAN, ADMINISTRATOR,)	
)	
Defendants.)	

I, Richard D. Ewing, Ph.D, hereby declare as follows:

1. I am a fish biologist with expertise on the impacts of pesticides on salmon. I obtained my Ph.D. in cellular and molecular biology in 1968. After conducting research at Oak

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DECLARATION OF RICHARD D. EWING, PH.D. - 1 -

1 Ridge National Laboratory and Oregon State University, I worked as a physiologist and hatchery
2 specialist at Oregon Department of Fish and Wildlife from 1975-1992. In 1992, I formed
3 Biotech Research and Consulting, Inc., which specializes in hatchery operations and chemical
4 analyses related to fisheries. My curriculum vitae is attached as Exhibit 1.

5 2. I am the author of Diminishing Returns: Salmon Decline and Pesticide, which was
6 released in February 1999 (Exhibit 2). In writing that report, I conducted a review of the
7 published literature, government surveys and reports, pertaining to the impacts of pesticides on
8 salmon and steelhead. That report is true and correct to the best of my knowledge. Since
9 completing Diminishing Returns, I have continued to follow the published literature on this
10 subject.

11 3. This declaration describes: (1) ways in which pesticides affect salmon; and (2)
12 evidence that particular pesticides may adversely affect salmon.

13 IMPACTS OF PESTICIDES ON SALMON

14 4. Pesticides include multiple classes of chemical and biological agents that are
15 purposefully introduced into the environment for a variety of reasons. They include insecticides,
16 herbicides, and fungicides. Pesticides can move from the site of application to waterways
17 through several means. Pesticides, particularly those that are highly soluble, may travel through
18 surface run-off during rainfall events. Soluble pesticides may also infiltrate into the soil and
19 subsequently enter ground water or subsurface runoff. From there, they can eventually travel to
20 waterways. Pesticides that are less soluble tend to adsorb to soil particles and reach waterways
21 in suspended sediments when erosion occurs. Finally, spray drift may result in significant
22 pesticide contamination of both soil and water.

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1 5. Pesticides in streams typically reach high levels for short periods of time but may
2 then decrease to low or undetectable levels, although some pesticide residues may persist at
3 significant levels. During periods of high concentration, damage to aquatic organisms may
4 occur. Low level exposure over time can also cause adverse effects.

5 6. Fish are particularly vulnerable at early stages when their sex characteristics,
6 immune system, bone structure, and organ systems are developing.

7 A. ACUTE EFFECTS

8 7. As part of its registration of pesticides, the Environmental Protection Agency
9 ("EPA") requires the chemical manufacturer to supply studies of the pesticide's short-term acute
10 toxicities to fish and aquatic animals. These acute toxicity studies (known as the LC₅₀) provide
11 the concentrations of the pesticide chemical that kills 50% of the test species within 48 or 96
12 hours. These tests are performed on a variety of test species, including selected fish species and
13 aquatic invertebrates.

14 8. At certain pesticide concentrations in water, which may be lower than the LC₅₀,
15 fish kills result. In Diminishing Returns (at 17-18), I provided several examples of pesticide
16 spills that resulted in catastrophic kills of salmonids. Other examples of fish kills for other
17 species are abundant in the literature. It is possible for lethal concentrations of pesticides to
18 result from normal use.

19 B. SUBLETHAL EFFECTS

20 9. Sublethal effects are those that result from exposure to a pesticide in an amount
21 that is not high enough to cause death, but can cause damage to an organism in other ways, such
22 as physiological and behavioral changes that can ultimately impact survival. During and
23

1 immediately after storm events, pesticide residues are more likely to be detected in water and the
2 concentrations are more likely to present ecological risks. These effects can occur throughout the
3 entire life history of salmonids, from the hatching of eggs, growth and maturing of young
4 salmon, migration of juveniles to the ocean, and return of adults for spawning. It is felt by many
5 toxicologists that sublethal concentrations may be more important to survival of populations of
6 fish than lethal concentrations. Murty (1986) states that "Mass mortality of fish due to pesticide
7 exposure is rare More commonly, fish are subjected to long-term stress arising from
8 exposure to sublethal concentrations. In the long run, these sublethal concentrations may prove
9 more deleterious than the lethal concentrations, because subtle and small effects on the fish may
10 alter their behavior, feeding habits, position in the school, reproductive success, etc." (Exhibit 3)

11 10. Laboratory studies show that sublethal concentrations of pesticides can affect
12 many aspects of fish biology. As part of its registration of pesticides, EPA may require
13 registrants to supply studies that measure this type of impact after longer-term exposure to the
14 test pesticide. These tests are known as chronic, early life-stage, or life-cycle tests, and they
15 study impacts such as effects on survival, reproduction, appearance, and size, and behaviors such
16 as mobility. If required, these tests are performed on a variety of test animals, including selected
17 fish species and aquatic invertebrates. Some of the documented effects from these tests as well
18 as other studies are summarized below.

19 11. The ability to feed, to avoid predators, and to defend and maintain territories in
20 the river system all depend upon the swimming ability of the fish. Laboratory studies have
21 shown that low concentrations of pesticides can alter swimming ability. Documented effects
22 include reduced swimming speed, loss of stamina, and diminished orientation ability. Such
23

interferences with swimming performance would reduce the ability to feed and avoid predators.

Diminishing Returns at 19-21.

12. Many pesticides disrupt schooling behavior, which salmon utilize to evade predators during migration. Diminishing Returns at 22-23.

13. Several pesticides have been shown to cause fish to seek higher or lower water temperatures depending on the concentrations of pesticides to which they are exposed. In one study, salmonids sought lower temperature water at low concentrations of a pesticide, but, as the pesticide concentrations increased, the salmon sought warmer water to stimulate detoxification. The higher temperatures could subject the fish to increased dangers of disease and predation.

Diminishing Returns at 22.

14. In addition to changes in behavior, there is some growing evidence that exposure to relatively low concentrations of pesticides can disrupt the immune system. Fish in polluted waters are subject to more frequent and more severe outbreaks of disease because many synthetic chemicals tend to suppress the immune system. Diminishing Returns at 27-28.

15. Pesticides can also affect the endocrine system. Endocrine systems control the production of hormones, which in turn control many other functions, such as sexual development and bone formation. Fish are especially vulnerable to endocrine-disrupting effects during early stages of development. The sexes of salmonids are not fixed until after the fry stages of development. Through exposure to sex hormones at early stages of development, genetic males may become physiologic females and vice versa. At low concentrations, pesticides have been shown to act as mimics of sex hormones or inhibitors of sex hormone development, causing abnormal sexual development, feminization of males, and abnormal sex ratios. Diminishing

1 Returns at 29-35. A recent study on wild spawning chinook salmon in the Columbia River has
2 shown the presence of male sex chromosomes in a high percentage of spawning female salmon,
3 suggesting sex reversal in these fish.

4 C. INDIRECT EFFECTS

5 16. Sublethal concentrations of pesticides can indirectly affect fish populations by
6 interfering with their food supply or altering aquatic habitat.

7 17. Such indirect effects include significant reductions in the abundance of food
8 organisms, such as adult insects, insect larvae, and other invertebrates on which fish depend for
9 their growth. Interference with salmonid growth has deleterious effects on smolting, immune
10 function, predator avoidance, seaward migration, and seawater adaptation.

11 18. Removal of aquatic and terrestrial vegetation can decrease habitat suitability.
12 When pesticides kill aquatic plants, small fish are more susceptible to predation. Removal of
13 riparian vegetation can result in elevated water temperatures to sub-optimum levels, decreasing
14 growth and increasing the risk of disease. Decomposition of aquatic plants killed by pesticides
15 can lower the oxygen content of the water to levels that are lethal to salmonids. Insecticides that
16 enter the water kill aquatic insects, a major food source for salmonids. Herbicides that enter the
17 waterways kill algae and diatoms that are the food source for aquatic organisms that the
18 salmonids use for food.

19 19. While these effects are subtle, evidence suggests that in complex ecosystems,
20 indirect effects can be even more important than direct effects. For this reason, the impacts of
21 pesticides on aquatic insects, invertebrates, and plants may be just as important indicators of
22 aquatic ecosystem health as the direct effects on the salmon. Diminishing Returns at 36-38.

EVIDENCE THAT PARTICULAR PESTICIDES MAY
ADVERSELY AFFECT SALMON

20. As described above, the acute toxicity of pesticides to fish is documented in LC₅₀ studies submitted to EPA. A growing body of scientific evidence is revealing a wide array of effects of pesticides on salmon at concentrations far lower than the lethal dose.

21. Unfortunately, there are few comprehensive monitoring programs that document the presence and concentrations of pesticides in salmon-bearing waters. A recent report commissioned by the Oregon Legislature concluded that pesticides are detrimental to salmon, but “[s]ince little monitoring is done to detect the presence of pesticides and fertilizers in streams, the level of exposure by fish to chemicals is largely unknown.” Botkin *et al.* 1995 (emphasis in original). In my opinion, it is critical to conduct further studies, monitoring, and assessments of the impacts of pesticides on salmon. I understand that the consultations sought in this litigation would provide expert review of the impacts of particular pesticide uses on salmonids and their habitat. This expert review is an important step in understanding the unappreciated effects of pesticides at low concentrations on the biology of salmonids.

22. While much is unknown about the full range and extent of pesticide impacts on salmon, sufficient research and monitoring have been done to date to raise concerns about various pesticide uses. I have described above some of the scientific literature concerning pesticide effects on salmonids and their habitat. The water quality information from the National Water Quality Assessment Program (“NAWQA”) of the U.S. Geological Survey (“USGS”) provides evidence that certain pesticide uses are of particular concern.

1 A. DETECTIONS OF PESTICIDES AT CONCENTRATIONS THAT EXCEED
2 ESTABLISHED AQUATIC LIFE CRITERIA

3 23. Through the NAWQA, the USGS has conducted water quality monitoring in
4 approximately 50 river basins and aquifers throughout the United States, called study units. Four
5 of these study units coincide or overlap with the range of threatened or endangered salmonids
6 and encompass critical habitat that has been designated for them.

7 24. The Puget Sound Basin study area coincides with the range of the Puget Sound
8 Chinook Salmon evolutionarily significant unit ("ESU"), which has been listed as threatened.
9 The Willamette Basin study area coincides with the range of the Upper Willamette Chinook
10 Salmon ESU, which has also been listed as threatened. The San Joaquin-Tulare Basin system
11 study unit overlaps the southern portion of the range of the threatened Central Valley California
12 Steelhead.

13 25. In its published water quality assessments, the USGS has reported detections of
14 pesticides in surface water in each of these basins. Water Quality in the Puget Sound Basin,
15 Washington and British Columbia, 1996-1998 (2000); Pesticides in Selected Small Streams in
16 the Puget Sound Basin, 1987-1995 (1997); Water Quality in the Willamette Basin, Oregon,
17 1991-1995 (1998); Distribution of Dissolved Pesticides & Other Water Quality Constituents in
18 Small Streams, & their Relation to Land Use, in the Willamette River Basin, Oregon, 1996
19 (1997); Water Quality in the San Joaquin-Tulare Basins, California, 1992-1995 (1998). (Exhibits
20 4-8). These detections are limited by the fact that the USGS surveyed for only a subset of
21 registered insecticides and herbicides. The USGS did not survey for any fungicides other than
22 pentachlorophenol nor for many herbicides and insecticides commonly used in the Northwest.

1 Fungicides have been shown to be of special concern for salmonids for their potential endocrine
2 disruptive effects or effects on predator avoidance.

3 26. To assess the potential risks posed by the detections, USGS compared the
4 concentrations detected in surface water with aquatic life criteria that have been established for
5 the particular pesticide. USGS found exceedances of aquatic life criteria for 14 pesticides. The
6 chart below presents the detections that exceeded aquatic life criteria in the USGS surveys:

8 EXCEEDANCES OF AQUATIC LIFE CRITERIA

9 ACTIVE INGREDIENT

10 Azinphos-Methyl
11 Carbaryl
12 Carbofuran
13 Chlorpyrifos
14 Diazinon
15 Malathion
16 Trifluralin
17 Atrazine
18 Simazine
19 2,4-D
20 Diuron
21 Dicamba
22 Metribuzin
23 Lindane (gamma-BHC &
24 HCH)

19 27. The aquatic life criteria have been set based on a variety of factors, including
20 acute and sublethal effects on fish and other aquatic organisms such as aquatic plants and
21 invertebrates. As the above discussion of pesticide impacts on salmonids shows, salmonid
22 populations may be adversely affected both directly and by negative impacts to aquatic plants
23 and aquatic invertebrates.

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28. A limitation of the USGS assessments stems from the small number of aquatic life criteria that have been established. EPA, through the Clean Water Act, has established aquatic life criteria for only a handful of insecticides and for no herbicides or fungicides commonly used today. Although other scientific bodies and regulators have established aquatic life criteria for some pesticides, less than two dozen of the more than 100 pesticides surveyed in the NAWQA surveys have aquatic life criteria from any source.

29. The USGS assessments of pesticide concentrations in major river systems provide examples of the pervasiveness and longevity of these chemicals in our waterways. Only a small number of the total pesticides available, and only the the active ingredients themselves, were examined because of budget limitations. From these limited studies, from the exceedance of aquatic life criteria found, and from the studies on effects of sublethal concentrations on fish, there is reason for concern about the effects of pesticides in our waterways on fish populations.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct. Executed on this 19th day of April, 2001, at Corvallis, Oregon.

Richard D. Ewing
Richard D. Ewing, Ph.D.